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ABSTRACT

This paper analyzes some of the characteristics of research on teacher thinking as it relates to educational policy. An introductory section discusses the problems inherent in relating research on teacher thinking to educational policy, based on the difference between conclusion-oriented research (which is appropriate for teacher thinking) and decision-oriented research (which is appropriate for educational policy). At the present state of the art in research on teacher thinking, there is no comprehensive, decision-oriented knowledge to guide policy. Accordingly, the second section discusses features of policymaking in education that create difficulties or opportunities for application of research on teacher thinking. Policy problems are characterized as (1) public in nature; (2) consequential; (3) complex; (4) dominated by uncertainty; and (5) reflective of disagreement about the goals to be pursued. Each of these features of policymaking is examined in light of existing knowledge on teacher thinking. The third section discusses the role of schemata in learning from research. These schemata could provide policymakers with new ways of understanding educational problems. Twenty-four references are listed. (TE)

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Problems and Issues in Relating Research on Teacher Thinking to Educational Policy

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This paper analyses some of the characteristics of research on teacher thinking ,on one hand, and the requirements of policy making , on the other hand. Problems for relating research to educational policy are discussed and some possible links are proposed.

Orientations of research on teacher thinking

One of the main problems in relating research on teacher thinking to educational policy stems from the inherent differences in the nature of these endeavours. Whereas most research on teacher thinking is conclusion oriented, policy making may require a decision oriented approach to research (Cronbach and Suppes 1969). Conclusion oriented research is defined as studies of the nature of man and society that are designed to lead to general principles. These conclusion oriented inquiries may yield some practical applications. But, " Most fundamental knowledge, indeed , cannot be 'applied'; it does not prescribe a suitable practice . Conclusion oriented studies are significant for practice if, cumulatively, they help the decision maker take the right things into account; they are most unlikely to give the decision maker the blueprint for an effective procedure, in advance of decision oriented research." (Ibid p 123,4). This paper argues that at the present state of the art most research on teacher thinking is not decision oriented and that, therefore, its relevance for policy making is limited. Some examples of research are presented in order to illustrate this point. Looking at the chapters included in two books on teacher thinking (Halkes and Olson 1984, and Ben-Peretz, Bromme and Halkes 1986), we can see that they focus on the following issues: Models and methodology for the study of teacher thinking; Content and processes of thinking in various teaching tasks ; Advances in methods of data collection and analysis. All these topics reflect the nature of research on teacher thinking as a new

field of study, searching for its conceptual boundaries and for appropriate modes of inquiry. Only few studies reflect a more decision oriented approach. Thus, we find a series of chapters dealing with pre- and inservice training of teachers based on teacher thinking perspectives (Halkes and Olson 1984).

Additional evidence for the scarcity of research efforts on teacher thinking which may lead to policy making decisions, can be found in Clark' s and Peterson's review on "Teachers' Thought Processes " (1986). They propose three major categories of research: Teacher planning; Teachers' interactive thinking; and, Teachers' theories and beliefs. According to Clark and Peterson , the literature on teacher planning is " almost exclusively descriptive and deals primarily with the planning of experienced elementary teachers." (Ibid p. 267). That means that at present there is not enough knowledge about the nature of teacher planning in a variety of contexts and that we still lack insights into the complex relationships between teacher planning and the process of teaching. Until such knowledge will be available to policy makers it is difficult to imagine policy decisions that are related to the research.

In the realm of interactive thinking Clark and Peterson claim that " we do not have a clear idea , however , of what constitutes effective interactive decision making by a teacher ." (ibid p. 281). If we assume that policy making in education strives for more effective teaching , and for the improvement of learning, we have to admit that research on teachers' interactive thinking does not provide us with a sound basis for decision making. As to teachers' theories and beliefs, the authors state that " it is difficult to synthesize a clear and unequivocal set of conclusions about teachers' implicit theories ". (ibid p. 291).It seems that at present research on teacher thinking does not offer sufficient " conclusions " that may be considered as the appropriate basis for policy making. More important, because of the inherent difficulties in transforming conclusion oriented research into practice, and because of the scarcity of research which aims directly at policy decision making , we may be far away from valid and defensible use of research on teacher thinking.

Another implication of the nature of research on teacher thinking relates to the notion of control. Educational policies are designed for implementation, they aim at control by virtue of some measure of public authority. In contrast, research on teacher thinking is far from a control orientation. It is, usually, a private enterprise , lacking the aura of public authority, even when publicly funded . It tends to focus on the development of insights into

individual cases and particular instances , without expectations for "implementation" of results.

Policy making in Education

We have argued that at the present state of the art in research on teacher thinking there is a lack of comprehensive , and decision oriented, knowledge to guide policy. We turn now to the discussion of some of the features of policy making in education which may be viewed as creating opportunities, or difficulties,for application of research on teacher thinking.
Dale Mann (1975) sees policy issues as a " middle stratum ", with macrosocietal problems constituting the level above, and operational issues of management and administration characterizing the level of decisions below policy problems. Policy problems are defined by Mann as having the following characteristics: " 1) they are public in nature, 2) they are very consequential, 3) they are complex, 4) they are dominated by uncertainty , 5) they reflect and are reflected by disagreement about the goals to be pursued. " (ibid p. 11).
Let us examine these features in the light of existing knowledge on teacher thinking .
The public nature of policy issues implies that these are " perceived as needs that are now, or are about to be, appropriate for governmental action." (ibid p. 11). It may well be claimed that the widely expressed dissatisfaction with the functioning of the educational system establishes needs that are appropriate for policy actions. Still, it is questionable whether existing research on teacher thinking offers substantial and relevant grounds for addressing these needs.Valid policy decisions depend on wealth of information. Bauer (1968) states that for decisions and actions which "generally require the most information and contemplation, we tend to reserve the term policy." (ibid p. 2). We have seen that such wide and valid information may still be lacking.
The topics of research which are chosen by investigators , who are interested in teacher thinking , are not necessarily relevant to policy makers. Thus, some research on teacher thinking focusses on the planning activities of experienced elementary teachers , while much of the disssatisfaction with the educational system relates to the functioning of high schools (Rutter et al 1979, Boyer 1983).

" Policy problems are consequential because they combine fundamental , (and often political) , relationships with substantial impacts in substantial numbers of people. " (Mann 1975, p. 13). There is no doubt that

research on teacher thinking relates to important , and often political, issues, such as the professional status of teachers. It reflects some fundamental concerns of education : the modes in which teacners plan in the pre-active phase of teaching; their interactive decision making; their post-teaching reflections. Research on teacher thinking seems to be closely related to the processes of teacher development. Moreover, any policy decisions based on this research may have potential impact on very large numbers of teachers and students. It appears , therefore, that from the point of view of being of inherent consequence research on teacher thinking has much to offer to policy makers. The question remains whether present day knowledge on teacher thinking is ripe for such a contribution.

Policy issues are complex. According to Mann (1975) , school issues are multifaceted, presenting " a veritable labyrinth for analysis and action " (ibid p. 14) . This characteristic of policy issues suggests difficulties for any attempt to relate research to policy. Research on teacher thinking focusses on a rather narrow and limited aspect of schooling, namely, on what goes on in the heads of teachers. Though this is , indeed , an important element in the complex network of schooling , it would seem to be very difficult to base policy decisions, affecting school life, on this aspect alone, without considering other facets of schooling . The inherent complexity of classroom environments makes any extrapolation from one teaching situation to other circumstances questionable. Present studies on teacher thinking may offer insights , and may suggest new ways in perceiving the professional activities of teachers, but it is extremely difficult to outline directives for policy based on these studies. Good examples of such enlighening research are , for instance, the study by Lampert (1985) about teachers' strategies for understanding and managing classroom dilemmas, the work done by Bromme and Dobslaw on teachers' explanation of students' understanding (1986), or studies conducted by Connelly and Clandinin (1985) on the personal practical knowledge of teachers. These studies, and others as well, provide exciting new conceptual frameworks for research, and extend our understanding of teaching and teachers . They enrich our insights into the complexities of classrooms in action, therefore, it seems that in fact, they make the relationship to policy decisions even more problematic. This may seem like saying that the more we know, the less able we may be to act on our knowledge. Indeed, the very relationship between knowledge to action , as reflected in various studies on teacher thinking, is viewed in different ways. (Clandinin and Connelly 1986), adding to the difficulties in trying to bridge between research and

policy making. Clandinin and Connelly differentiate between logistic, problematic and dialectic approaches to the relationships of teacher thinking to teacher action. Studies on teacher thinking may assume that thoughts are directing action in an almost linear fashion, reflecting a "logistic" approach. (Munby 1983, Olson 1981,). Other studies reflect , according to Clandinin and Connelly , a view of the relationship seen as "problematic "(Lampert 1985). Still others, like Connelly and Clandinin (1985) and Elbaz (1981), are viewed as adopting a reflexive, "dialectical" approach to the relationship between thought and action. These different approaches to the very nature of the relationsnip of thinking to practice seem to indicate that substantively different links to policy can be envisaged ,and have to be elaborated,before research on teacher thinking can inform policy.

One of the characteristics of policy issues, as defined by Mann is their uncertainty. Policy deals with the future, " The past may be all we can know but the future is all we can affect. " ....." Policy problems exist, are defined, are the subject of attempts at resolution - all in the future. Their shape , salience, and relationships with other areas may all be changed by the long process from recognition to formulation to implementation (and hopefully to 'solutions') has been carried out." (ibid p.15). This feature of policy decisions creates difficulties for any attempts to use research to solve educational problems , because all research is by its nature based on past experiences . Research on teacher thinking is hardly predictive and is not future oriented.

Time plays an important role in dealing with policy issues from yet another point of view. " Practically all policy problems have an historical context. They have become consequential matters of public concern precisely because they have not been susceptible to easy solutions. " (ibid p. 15). If we look at policy problems as " middle stratum " issues, which are characterized by being imbedded in historical backgrounds, then the role of research on teacher thinking in relating to these issues is doubtful. It is not clear, at present, how insights into teacher thinking will be helpful in relating to such longstanding policy problems like literacy, or issues of equity versus excellence.

Policy issues are characterized by the differing interests that are involved in the process of decision making. " We can find many basic interest schisms in the society that are clearly reflected in education problems." (ibid p. 16) Any attempt to base policy decisions on research on teacher thinking would raise issues of differing and conflicting interests. Let us imagine that

research on teacher planning would lead to policy decisions about the structure of working hours of teachers at school, such as a significant shortening of the load of actual classroom teaching. This would probably be welcomed by teachers and teacher unions, but would create a demand for greater financial resources, higher taxes, and recruiting of more teachers. It is reasonable to believe that the ensuing conflict of interests would make the implementation of such a policy very difficult.

Up to now we have concentrated our discussion on the problematic issues in relating research on teacher thinking to educational policy. What, if any, are some possible links tying this research to policy?

The role of schemata in learning from research

Much has been written about possible bridges between research and the practice of teaching. This literature may be viewed as providing frameworks for relating research on teacher thinking to policy making.

In his article on " Learning to teach effectively ' from research on teacher effectiveness ", Fenstermacher (1982), argues that there may be different ways to build bridges between research on teaching and teacher practices. Among these possible bridges he discusses rules, evidence and schemata. By rules Fenstermacher means the conversion of results of research to " imperatives for teachers to follow ". (ibid p. 7). Bridging by evidence relates to the serious weighing of research results by practitioners. Whereas " rules are imprecise representations of research findings because their construction requires the rulemaker to interpret the findings; evidence conveys to the practitioner precisely what researchers have learned from their inquiries. " (ibid p. 9). The third way to bridge research and practice is with schemata , which " provide a way to 'see' a phenomenon and a way to think about it. " (ibid p. 9). New schemata may help practitioners to structure and interpret their educational experiences in new and unaccustomed ways, leading to new practices. Fenstermacher's distinctions may help us see a way for relating research on teacher thinking to educational policy in spite of the reservations voiced above. There are probably no "rules" to be devised on the basis of present research on teacher thinking, which may be conceived as guidelines for policy makers. But, there may be some research which will provide "evidence" for consideration and deliberation. A good example of such research is Lampert's work on teacher dilemmas (1985). Teachers ,and administrators, may tend to believe that dilemmas have to be "solved " by adopting one of several

conflicting ways to handle a situation. Lampert's notion of "dilemma management " , by trying to live with the dilemma through the adoption of strategies which do not call for "either/or " decisions, may be used to rethink one' s approach to dilemma situations. Policy makers may reflect on their own beliefs about appropriate ways to deal with dilemmas in the light of Lampert's research findings on the ways in which teachers handle their dilemmas.

Probably the most relevant mode of relating research on teacher thinking to policy making is through schemata which are developed by the investigators. An example of such a schemata is the distinction between the knowledge and instructional actions of novices and expert teachers. (Leinhardt et al 1984 , Leinhardt and Greeno 1986, Berliner 1986). Clark (1986) states that " we have come to believe that there are qualitative differences in the ways in which experts and novices know and think about what they know." (ibid p. 10). This schemata may be considered as having possible impact on policy makers. The knowledge that we have ,at present,about qualitative differences between expert teachers and novices may not be considered grounds for radical policy decisions about the role of novice teachers in schools. On the other hand, insights into thinking patterns of novices may shape teacher education policies , may be seen as grounds for changes in the curriculum of teacher education programs , and in teacher induction stategies. Leinhardt and Greeno suggest that " new teachers can benefit from information about different routines, methods of teaching them to students, and ways of using them effectively to maintain student interest."(ibid p. 94). Concepts, such as "action agenda ", or, " techniques of structuring information ", may become part of the knowledge base of teaching. The perceived possible impact is not only on the content of the curriculum of teacher education programs, but also on the nature of teacher practicum, its duration, timing and structure. The practicum may last longer, may continue after novice teachers finish their pre-service programs, and may include significant sections of guided analysis of thought and action patterns of teacners. The effect of such changes on the timetables of schools may be far reaching, with ensuing conflicts of interests. Still , this is an example of a possible impact of research on teacher thinking on educational policy.

The discussion so far has brought us to the conclusion that schemata developed by researchers on teacher thinking may be important for teacher education policies . Let us turn now to some elaboration of this point.

Research on teacher thinking and teacher education policy

The field of teacher education may be viewed as exhibiting some of the characteristics which make it an appropriate arena for policy making at the "middle stratum" level . Shulman (1987),discussing several reports on how to improve teaching, states that " one of the recurrent themes of these reports has been the professionalization of teaching ." (ibid p. 3). There is no doubt that this issue has been of public interest, especially in the U.S.A. Two major public reports have been the Holmes Group Report (1986), and the Carnegie Task Force Report (1986). It seems that the professionalization needs of teaching are perceived as being appropriate for governmental action. Any reform proposals, carried out in the light of these public concerns, are bound to affect very substantial number of people, and may involve considerable conflicts of interests. According to Shulman (1987), professional reform movements reflect a belief that there exists a knowledge base for teaching. Shulman outlines the categories of knowledge "that underlie the teacher understanding needed to promote comprehension among students" (ibid p. 8). Pedagogical content knowledge is , according to Shulman, "the category most likely to distinguish the understanding of the content specialist from that of the pedagogue."(ibid p. 8). This domain could benefit greatly from any insights provided by research on teacher thinking. How teachers understand the educational potential of the subject matter to be taught, how they interpret texts and transform these into instruction, are important issues of pedagogical reasoning. Insights into these issues may be important for changing policies of teacher education. In Shulman's words: " The conception of pedagogical reasoning places emphasis upon the intellectual basis for teaching performance rather than on behavior alone. If this conception is to be taken seriously, both the organization and content of teacher education programs and the definition of the scholarly foundations of education will require revision." (ibid p. 20).

A specific example of ways in which research on teacher thinking may inform the organization and content of teacher education programs relates to curriculum knowledge and teacher planning. Teacher planning, based on the "formal" curriculum, i.e. existing guidelines and materials such as textbooks, is essentially the transformation of ideas into teaching acts. Notions of what this transformation entails vary. Clark (1986), suggests that research on teacher thinking has undergone a conceptual change since the 70's. The leading metaphor was the teacher as "decision maker" ,who makes rational decisions about materials and instructional strategies based

on weighing of alternatives. Since the 80's, according to Clark, teachers tend to be viewed as "reflective practitioners", who interpret their teaching situation based on their personal knowledge. This personal knowledge may guide teachers' understanding and interpretation of the potential embedded in curriculum materials (Ben-Peretz 1975), in terms of teachers' own understanding of the nature of subject matter and instruction. Curriculum interpretation is one component of pedagogical reasoning. Development of knowledge about the ways in which teachers interpret materials, may inform policy decisions about processes of teacher education. One policy implication may be the creation of opportunities to work in groups, analyzing and comparing different interpretations, and scrutinizing their practical implications in a variety of teaching contexts. The different interpretations may then be transformed into lesson plans, to be reflectively tried out and discussed in further group meetings. Such a process may enrich teachers' notions of the educational potential of curriculum materials, and may, in a sense free them from the " tyranny of texts".(Shulman, personal communication). How this process is to become a more central part of teacher education, what it would mean in terms of preparation of special teaching materials, how it would fit in with notions about the practicum, and how it would figure in teacher assessment procedures, are some of the policy decisions that would have to be made.

Conclusion

Some of the issues and problems in relating research on teacher thinking to educational policy making have been outlined above. It seems that one appropriate way of conceiving possible links between these two domains is through the use of schemata which have been developed by researchers on teacher thinking. These schemata could provide policy makers with new modes of understanding educational problems . Because of the importance of "pedagogical reasoning" in the development of professional teaching it is contended that research on teacher thinking could have significant impact on the policies of teacher education. In order for that to happen it seems crucial to create a common basis for communication between researchers on teacher thinking and policy makers in education.

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